

# The Major Topics of School Algebra

The National Mathematics Advisory Panel Report identifies the major topics of school algebra.

# **Selected Major Topics\***



### **Symbols and Expressions**

- -Polynomial and rational expressions
- —Arithmetic and finite geometric series



## Linear Equations

- -Real numbers as points on the number line
- -Linear equations/inequalities and their graphs
- -Systems of simultaneous linear equations



### **Quadratic Equations**

- -Factors/factoring of quadratic polynomials
- -Completing the square in quadratic expressions
- -Quadratic formula



#### **Functions**

- -Linear, quadratic, and polynomial functions
- Nonlinear functions (e.g., square and cube root functions; absolute value; step functions)
- -Exponential, logarithmic, and trigonometric functions



#### Algebra of Polynomials

- -Roots and factorization of polynomials
- -Complex numbers and operations
- -Fundamental theorem of algebra



### Combinatorics and Finite Probability

 Applications of the binomial theorem and Pascal's Triangle



## **Practice 1: Topics of Algebra**

- -Teach for understanding of topics of school algebra
- -Make linkages among topics
- -Develop problem-solving skills
- -Enhance teacher understanding
- -Address misconceptions in learning algebra



# **Practice 2: Multiple Paths**

- Establish a course sequence to cover all topics of school algebra
- Provide multiple curricular pathways to ensure success
- -Ensure that students are ready for algebra before enrolling them in algebra courses
- Provide opportunities for all students to learn school algebra
- Use the topics of school algebra to inform standards, instructional materials, and assessments